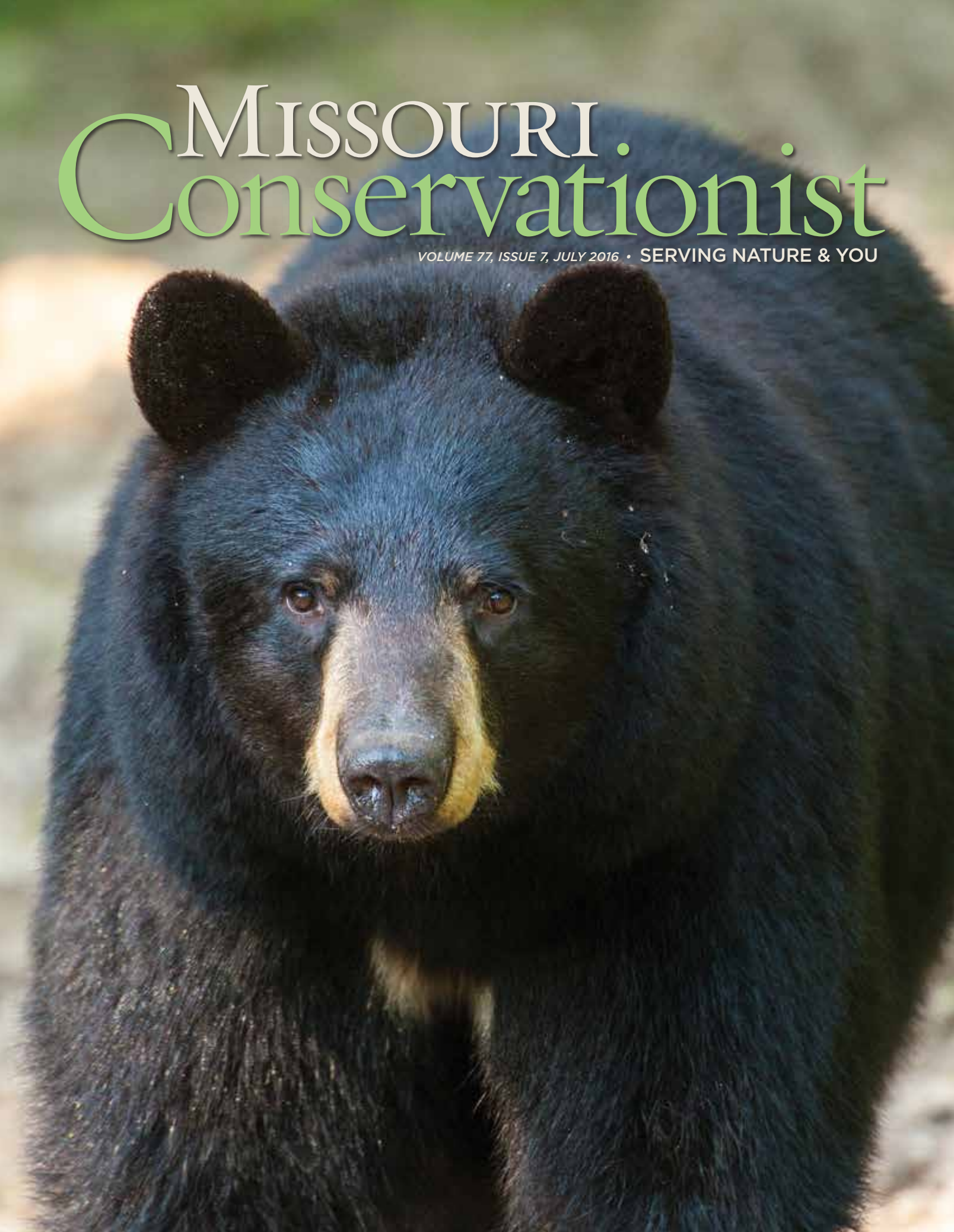


MISSOURI. Conservationist

VOLUME 77, ISSUE 7, JULY 2016 • SERVING NATURE & YOU



Intelligent Tinkering

In *A Sand County Almanac*, Aldo Leopold wrote, “To keep every cog and wheel is the first precaution of intelligent tinkering.”

Missouri’s wild places are blessed with an abundance of cogs and wheels. Nearly 80 species of mammals, 350 species of birds, 100 species of reptiles and amphibians, 200 species of fish, tens of thousands of insects, spiders, and other invertebrates, and 2,800 species of plants rely on Missouri’s habitats for part of their life cycle.

Managing each of these species individually would be impossible. Instead, the best approach is to divide groups of plants and animals into the habitats where they are found and then protect, enhance, and restore those habitats.

The Conservation Department’s *Comprehensive Conservation Strategy* is the blueprint we use to do this. It identifies

the Show-Me State’s best locations for fish, forest, and wildlife conservation and offers science-based guidelines for managing the habitats those locations contain. Because 93 percent of Missouri is in private ownership, a key part of the plan is working with partner agencies and private landowners to accomplish conservation goals.

To see how the Comprehensive Conservation Strategy is being put into practice, take a look at *Caring for Missouri’s Best Wild Places* on Page 16. This article showcases a few examples of how focusing conservation efforts on where they will do the most good will help ensure Missouri’s full array of cogs and wheels will be around for future Missourians to enjoy.



Robert L. Ziehmer, director



Dunn Ranch Prairie

FEATURES

10 **Bear With Us**

by Kristie Hilgedick

Department researchers visit black bear dens to study population growth

16 **Caring for Missouri's Best Wild Places**

by Bill Graham

Partners use a wide-ranging approach to conserve unique areas and meet local needs

24 **Up a Lazy River**

by Jim Low

The upper portion of Missouri's crookedest river is a smallmouth stream beyond compare

Cover: A black bear sow near Forsyth, photographed by Noppadol Paothong.

📷 500mm lens • f/8 • 1/50 sec • ISO 800

DEPARTMENTS

2 **Letters**

4 **Hunting & Fishing Calendar**

4 **Agent Notes**

5 **Ask MDC**

6 **News & Events**

30 **Plants & Animals**

32 **Places to Go**

33 **Discover Nature**

WHAT IS IT?

Our photographers have been busy exploring the intricacies of outdoor Missouri. See if you can guess this month's natural wonder. The answer is revealed on Page 7.



DAVID STONNER

SQUIRRELS

Start 'Em on Squirrels [May; Page 10] was a great article that brought back many memories. As a kid, sitting in a blind wasn't for me, but walking through the woods, seeing, smelling, and feeling everything was my cup of tea. One big difference between your article and my experience — the gun. I had to use my dad's old .22 single shot. I became an excellent shooter. Thank you for the memories you fired up and thanks for the great magazine.

Gerasim Mayden, Florissant

AGENT NOTES

I enjoyed Paul Veatch's *Agent Notes* in the April issue [Page 4], regarding stocking trout in the Eleven Point River. I helped Conservation Agent Gene Woolverton several times, from about 1969–1971. He was a tremendous agent and a good friend, and was a stickler for going by

the rules and regulations established by the Conservation Commission. He was a good one.

Mabe Davidson, Branson

SWEET SOUNDS

I enjoyed your article on the indigo bunting [May; Page 6]. It has a real sweet sound. I listened to it on YouTube.

Jerry O'Neill, Wentworth

MAY ISSUE

You put together the most informative and best magazine you've ever put out [May]. What Is It? [Page 1] is one of my favorites. The indigo bunting is a beautiful bird [Page 6]. I can't wait to read *Start 'Em on Squirrels* [Page 10], as well as *Grazing for Conservation* [Page 16]. I had to say thank you. It is better than any book I've read, and I'm keeping this one.

Carolyn Higginbotham, Stanberry

PRAIRIE MANAGEMENT

I was so very pleased by your prairie management article in the May issue [*Grazing for Conservation*; Page 16]. More states now are beginning to realize the value of original prairie and are establishing and/or managing their prairie close to original prairie ecosystem ideas.

I know you get great satisfaction and very visible appreciation from the results of your efforts. Keep up the good work.

Glen Snell, via email

RIVER WARRIORS

Your article, *River Warriors* [June; Page 16], brought a smile to my face.

Seven years ago, while teaching in Washington, my colleagues invited me to join them in a river cleanup. Little did I know I would be riding a small motorboat across the wide Missouri River in pursuit of the most bizarre castoffs. I'll never forget the laughs we had at finding a paddle board, a bouncy horse, and an empty bottle of Mrs. Butterworth's syrup.

This experience definitely brought us closer together as a team, and remains one of my most favorite adventures. I'm so happy to see that river cleanup efforts remain underway in several communities across Missouri.

Ward Behle, Sedalia

NATURE'S BEAUTY

The wooded scene with the gorgeous natural lighting on pages 10 and 11 in the June issue [*Nature's True Value*] really caught my eye. The lit path through those trees makes me want to follow it and see where it would take me. Another place of beauty, I am sure.

Ramona Allen, Sedalia

SNAKES

Your June issue gave a good description of watersnakes [Ask MDC; Page 5]. The midland watersnake's coloration can resemble a cottonmouth's, which can lead to a bite on our creek. A key difference is that copperheads swim with their body on top of the water while watersnakes generally have only their head intermittently above water.

Bob Kipfer, Springfield



Reader Photo

THE VELVETEEN DEER

Steve Freeman of St. Charles captured this photo last summer of a buck in velvet over his backyard fence. "We have been fortunate for the past 25 years to have one of the last remaining parcels of undeveloped land in St. Charles abutting our backyard," said Freeman. "Unfortunately, this 30-acre lot has now been sold and is being subdivided into smaller lots for homes. The deer and all the wildlife have moved on." But the avid hunter and angler and his wife are now the proud owners of land in Franklin County. "We've found the perfect spot where I can have a field of my own as my backyard."



DEPARTMENT HEADQUARTERS

Phone: 573-751-4115

Address: PO Box 180,
Jefferson City 65102-0180

REGIONAL OFFICES

Southeast/Cape Girardeau: 573-290-5730

Central/Columbia: 573-815-7900

Kansas City: 816-622-0900

Northeast/Kirksville: 660-785-2420

Southwest/Springfield: 417-895-6880

Northwest/St. Joseph: 816-271-3100

St. Louis: 636-441-4554

Ozark/West Plains: 417-256-7161

SUBSCRIPTIONS

Phone: 573-522-4115, ext. 3856 or 3249

Address: Circulation, PO Box 180, Jefferson City 65102-0180

Email: Subscriptions@mdc.mo.gov

Conservationist online services: Subscribe to the magazine, update your mailing address, or sign up to receive an email when the latest issue is available online at mdc.mo.gov/conmag

Cost of subscriptions: Free to Missouri households

Out of State \$7 per year

Out of Country \$10 per year

Please allow 6-8 weeks for delivery of your first issue.

ASK MDC

Phone: 573-522-4115, ext. 3848

Address: Ask MDC, PO Box 180,
Jefferson City 65102-0180

Email: AskMDC@mdc.mo.gov

EDITORIAL COMMENTS

Phone: 573-522-4115, ext. 3847

Address: Magazine Editor, PO Box 180,
Jefferson City 65102-0180

Email: Magazine@mdc.mo.gov

READER PHOTO SUBMISSIONS

Flickr: [flickr.com/groups/mdc-readerphotos-2016](https://www.flickr.com/groups/mdc-readerphotos-2016/)

Email: Readerphoto@mdc.mo.gov

Address: Missouri Conservationist, Reader Photo,
PO Box 180, Jefferson City 65102-0180

MDC Online

Discover more about nature and the outdoors through these sites.

Blog: mdc.mo.gov/blogs

Facebook: [facebook.com/MDConline](https://www.facebook.com/MDConline)

Flickr: [flickr.com/photos/mdc_online](https://www.flickr.com/photos/mdc_online)

Instagram: [instagram.com/moconservation](https://www.instagram.com/moconservation)

Missouri Conservationist: mdc.mo.gov/conmag

Missouri Department of Conservation: mdc.mo.gov

Nature Shop: mdcnatureshop.com

Twitter: twitter.com/MDC_Online and [Nature_Videos](https://twitter.com/Nature_Videos)

YouTube: [youtube.com/user/moconservation](https://www.youtube.com/user/moconservation)

KIDS' MAGAZINE

Six times a year we'll bring you eye-popping art, photos, and stories about Missouri's coolest critters, niftiest natural places, and liveliest outdoor activities. Come outside with us and XPLOR!

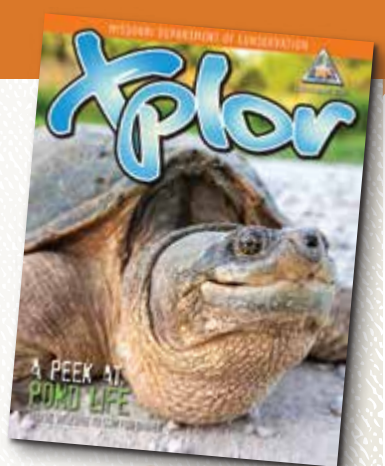
A Parents' Choice Approved Award Winner

Missouri residents: FREE (one subscription per household)

Out of state: \$5 per year; Out of country: \$8 per year

A guardian's name and address is required with the subscription.

Please allow 6-8 weeks for delivery of your first issue.



SIGN UP NOW!

mdc.mo.gov/xplor | 573-522-4115, ext. 3856 or 3249

MISSOURI Conservationist

GOVERNOR Jeremiah W. "Jay" Nixon

THE CONSERVATION COMMISSION

Don C. Bedell

James T. Blair, IV

Marilynn J. Bradford

David W. Murphy

Director Robert L. Ziehmer

Deputy Director Thomas A. Draper

Deputy Director Aaron Jeffries

Deputy Director Jennifer Battson Warren

General Counsel Jennifer Frazier

Internal Auditor Lisa Wehmeyer

DIVISION CHIEFS

Administrative Services Cyndi Voss

Design and Development Jacob Careaga

Fisheries Brian Canaday

Forestry Lisa G. Allen

Human Resources Thomas Neubauer

Outreach & Education Joanie H. Straub

Private Land Services Bill White

Protection Larry D. Yamnitz

Resource Science Mike Hubbard

Wildlife Jason Summers

CONSERVATIONIST STAFF

Editor Angie Daly Morfeld

Art Director Cliff White

Associate Editor Bonnie Chasteen

Staff Writer Heather Feeler

Staff Writer Kristie Hilgedick

Staff Writer Joe Jerek

Photographer Noppadol Paothong

Photographer David Stonner

Designer Les Fortenberry

Designer Marci Porter

Designer Stephanie Thurber

Circulation Laura Scheuler

The Missouri Conservationist (ISSN 0026-6515) is the official monthly publication of the Missouri Department of Conservation, 2901 West Truman Boulevard, Jefferson City, MO (Mailing address: PO Box 180, Jefferson City, MO 65102.) Subscription free to adult Missouri residents; out of state \$7 per year; out of country \$10 per year. Notification of address change must include both old and new address (send mailing label with the subscriber number on it) with 60-day notice. Preferred periodical postage paid at Jefferson City, Missouri, and at additional entry offices. Postmaster: Send correspondence to Circulation, PO Box 180, Jefferson City, MO 65102-0180. Phone: 573-522-4115, ext. 3856 or 3249. Copyright © 2016 by the Conservation Commission of the State of Missouri.

Equal opportunity to participate in and benefit from programs of the Missouri Department of Conservation is available to all individuals without regard to their race, color, national origin, sex, age, or disability. Questions should be directed to the Department of Conservation, PO Box 180, Jefferson City, MO 65102, 573-751-4115 (voice) or 800-735-2966 (TTY), or to the U.S. Fish and Wildlife Service Division of Federal Assistance, 4401 N. Fairfax Drive, Mail Stop: MBSP-4020, Arlington, VA 22203.

Printed with soy ink





At bat, snakes enjoy the offensive advantage of an ambiguous strike zone.

Agent Notes

Frogging in Missouri

MANY OF US have turned to fishing during the late hours of a hot summer day to beat the heat. At sunset on June 30, frogging season opens, bringing Missourians additional opportunities to experience the outdoors without the heat. Frogging is the sport of harvesting frogs at night with the aid of an artificial light using a multitude of tools, such as a gig, fishing pole, or by hand, just to name a few. Two species of frogs, the bullfrog and green frog, are legal to harvest in Missouri. Both species are found almost anywhere shallow water is present, such as pond banks or the river's edge.

There are both fishing and hunting methods used to harvest frogs. Each method provides varying levels of difficulty, making it the perfect sport for anyone from beginners to experts. A permit is required for frogging, and the method you choose will determine if you need a fishing permit or small game hunting permit. See the *Wildlife Code* for details.

Before summer is over, grab a flashlight and your preferred harvesting method and give frogging a try!

Tyler Mason is the conservation agent for Putnam County. If you would like to contact the agent for your county, phone your regional conservation office listed on Page 3.



HUNTING & FISHING CALENDAR

FISHING	OPEN	CLOSE
Black Bass		
Impounded waters and most streams north of the Missouri River	All year	None
Most streams south of the Missouri River	05/28/16	02/28/17
Bullfrogs and Green Frogs	06/30/16 at sunset	10/31/16
Nongame Fish Giggling		
Impounded Waters		
sunrise to sunset	02/01/16	09/14/16
sunrise to midnight	09/15/16	01/31/17
Streams	09/15/16	01/31/17
Paddlefish on the Mississippi River	09/15/16	12/15/16
Trout Parks		
Catch-and-Keep	03/01/16	10/31/16
HUNTING	OPEN	CLOSE
Coyote (restrictions apply during April, spring turkey season, and firearms deer season)	All year	None
Deer		
Archery	09/15/16 11/23/16	11/11/16 01/15/17
Firearms		
Early Youth Portion	10/29/16	10/30/16
November Portion	11/12/16	11/22/16
Late Youth Portion	11/25/16	11/27/16
Antlerless Portion (open areas only)	12/02/16	12/04/16
Alternative Methods Portion	12/24/16	01/03/17
Doves	09/01/16	11/29/16
Groundhog (woodchuck)	05/09/16	12/15/16
Pheasant		
Youth	10/29/16	10/30/16
Regular	11/01/16	01/15/17
Quail		
Youth	10/29/16	10/30/16
Regular	11/01/16	01/15/17
Rabbit	10/01/16	02/15/17
Sora and Virginia rails	09/01/16	11/09/16
Squirrel	05/28/16	02/15/17
Teal	09/10/16	09/25/16
Turkey		
Archery	09/15/16 11/23/16	11/11/16 01/15/17
Firearms		
Fall	10/01/16	10/31/16
Waterfowl	see the <i>Waterfowl Hunting Digest</i> or short.mdc.mo.gov/ZZx	
Wilson's (common) snipe	09/01/16	12/16/16
Woodcock	10/15/16	11/28/16

For complete information about seasons, limits, methods, and restrictions, consult the *Wildlife Code* and the current summaries of *Missouri Hunting and Trapping Regulations* and *Missouri Fishing Regulations*, *The Spring Turkey Hunting Regulations and Information*, *the Fall Deer and Turkey Hunting Regulations and Information*, *the Waterfowl Hunting Digest*, and *the Migratory Bird Hunting Digest*. For more information, visit short.mdc.mo.gov/ZZf or permit vendors.

Ask MDC

Address: PO Box 180, Jefferson City, MO 65102-0180
Phone: 573-522-4115, ext. 3848 **Email:** AskMDC@mdc.mo.gov



I was on Table Rock Lake and noticed two geese nesting on a gravel bar where people like to hang out in the summer. I'm worried about these waterfowl. Can anything be done to protect them?

The geese were done nesting by mid-May. Once the eggs hatch, the adult pair will lead their goslings — sometimes several miles — to an open, often grassy area where other parent geese and goslings already have gathered. There the group will gather and form a “crèche,” a term that refers to a collection of fledglings.

Several species of waterfowl, including Canada geese, are known to form crèches. This phenomenon allows a few adults to watch over a much larger group of young — up to several hundred goslings — giving the adult geese more

opportunity to forage.

If a predator does approach, noisy honking summons back the parents, who attempt to force the interloper to retreat by chasing, biting, and harassing it.

This tactic is sometimes, but not always, successful. Many goslings die naturally due to predation by foxes, dogs, coyotes, snapping turtles, large fish, and raptors. Although death is unpleasant to contemplate, predators are vital to the health and stability of the ecosystem.

We live in an area abundant with coyotes. We hear them singing both during the day and at night. What are they communicating and why do they howl?

The scientific name for the coyote is *Canis latrans*, or barking dog, an apt name for this particularly vocal species.

Employing a rich vocabulary, coyotes give various short sounds, such as barks, yips, growls, and whimpers.

Howling occurs at any time during the year, but more so during the mating period. These attention-getting sounds are heard most often from sunset to sunrise, but occasionally they are heard during the daytime, for example, before a storm.

Coyotes may bark alone or together. When one starts, often others take up the call until it becomes a chorus.

Although interpreting exactly what they are communicating involves some human speculation, researchers believe the animals are sharing information. When you hear a coyote call during the day, it might be communicating information about a fresh kill or complaining that another coyote is on its turf. It might be a mother in distress because her pup is missing or an amorous male chatting up a potential mate.

With practice and an educated ear, you may eventually be able to tell when a coyote is approaching its quarry and when it strikes.

Why do wild turkeys wallow in the dust?

Many species of birds enjoy the act of dust bathing, which helps birds clean themselves and remove parasites. The powdery dust helps absorb oils that collect near the skin and in the feathers. After coating those oily spots with loose dust, larger particles form. The debris is easily shed from the bird's feathers, removing the excess oil and dirt with it.



Celebrate Safely

The Missouri Department of Conservation reminds people to be extremely careful with fireworks, campfires, and other sources of fire that could cause a wildfire.

FIREWORKS

- » Don't light fireworks in any areas where the sparks could ignite dry grass, leaves, or other potential fire fuel.
- » Always have an approved fire extinguisher and an available water supply to douse sparks or flames.
- » Wet the area around where fireworks are being discharged.
- » Check with local ordinances and authorities for bans on fireworks and open burning.

OUTDOOR BURNING

- » Don't burn during wrong conditions. Dry grass, high temperatures, low humidity, and wind make fire nearly impossible to control.
- » Check with local fire departments regarding burn bans that may be in place.
- » A person who starts a fire for any reason is responsible for any damage it may cause.

DRIVING OFF ROAD

- » Wildfires can start when fine, dry fuel, such as grass, comes in contact with catalytic converters.
- » Think twice before driving into and across a grassy field.
- » Never park over tall, dry grass or piles of leaves that can touch the underside of a vehicle.
- » When driving vehicles off road, regularly inspect the undercarriage to ensure that fuel and brake lines are intact and no oil leaks are apparent.
- » Always carry an approved fire extinguisher on vehicles that are used off road.
- » Check for the presence of spark arresters on ATV exhausts.

MAKING A CAMPFIRE

- » Clear a generous zone around fire rings.
- » Store unused firewood a good distance from a campfire.
- » Never use gasoline, kerosene, or other flammable liquid to start a fire.

- » Keep campfires small and controllable.
- » Keep fire-extinguishing materials, such as a rake, shovel, and bucket of water, close.

NEVER LEAVE A CAMPFIRE UNATTENDED

- » Extinguish campfires each night and before leaving camp (even if it's just for a few moments).

SMOKERS: PRACTICE EXTRA CAUTION

- » Extinguish cigarettes completely and safely and dispose of them responsibly by burning them in a controlled campfire or packing them out.

CALL FOR HELP

- » Call 911 at the first sign of a fire getting out of control.

REPORT FOREST ARSON

- » Many wildfires are set by vandals. Help stop arson by calling 800-392-1111. Callers will remain anonymous, and rewards are possible.

Fire used in the wrong way can create disasters. Used in the right way, fire can help create habitat for wildlife. For more information on using prescribed fire as a land-management tool, visit mdc.mo.gov and search "prescribed fire."

Department Offers New Magazine App

Enjoy reading the *Missouri Conservationist*? Get it through your smartphone or other mobile device with our new free MO Con Mag mobile app. The free app gives you access to the latest issue of the magazine to save and read. Get more information and download the new app for Apple or Android devices at short.mdc.mo.gov/ZZY.



Managed Deer Hunt Applications Open

Deer hunters can apply online from July 1–31 for a shot at more than 100 managed deer hunts for archery, crossbow, muzzleloader, and modern firearms from mid-September through mid-January at conservation areas, state parks, national wildlife refuges, urban parks, and other public areas. Managed hunts include ones specifically for youth only and for people with disabilities. Hunters are selected by a weighted random drawing.

Results will be available Sept. 1 through Jan. 15. Selected applicants will receive area maps and other hunt information by mail.

Get more information on managed deer hunts and apply starting July 1 at short.mdc.mo.gov/ZkC.

Details about managed hunts can also be found in the Department's *2016 Fall Deer & Turkey Hunting Regulations and Information* booklet, available at regional offices, nature centers, permit vendors, and online at mdc.mo.gov.



WHAT IS IT?

Eastern Prickly Pear | *Opuntia humifusa*

The eastern prickly pear is a low spreading, succulent cactus. Its numerous yellow flowers with orange centers bloom from May through July. The large, paddle-like green pads are technically the thickened, flattened stems. New pads have tiny, soft, conical bumps that are the true leaves. These persist only briefly before drying and falling off. At the base of each leaf is a cluster of one to six spines plus many tiny, hair-like bristles that are very difficult to remove from the skin once they are embedded. Its fruit is edible, purplish red, and pear-shaped, with tufts or bristles. The seeds are embedded in a pale, slimy substance. The eastern prickly pear can be found nearly statewide, preferring to grow in sunny, dry places. Some of the plant's typical habitats include upland prairies, sand prairies, glades, bluffs, rocky stream terraces, pastures, roadsides, and open, disturbed areas. —*photograph by Jim Rathert*

Migratory Game Bird and Waterfowl Seasons

Missouri's upcoming 2016 migratory game bird season and 2016–2017 waterfowl season includes 20 more days for dove hunting, a 60-day duck season, and changes to season timing and length for geese.

2016 MIGRATORY GAME BIRD HUNTING

Mourning doves, eurasian collared doves, and white-winged doves

Season: Sept. 1 through Nov. 29

Limits: 15 daily and 45 in possession, combined total for all three species

Hours: One-half hour before sunrise to sunset

Sora and Virginia rails

Season: Sept. 1 through Nov. 9

Limits: 25 daily and 75 in possession, combined for both species

Hours: One-half hour before sunrise to sunset

Wilson's (common) snipe

Season: Sept. 1 through Dec. 16

Limits: 8 daily and 24 in possession

Hours: One-half hour before sunrise to sunset

American woodcock

Season: Oct. 15 through Nov. 28

Limits: 3 daily and 9 in possession

Hours: One-half hour before sunrise to sunset

2016–2017 WATERFOWL HUNTING

Teal

Season: Sept. 10–25

Limits: 6 daily and 18 in possession

Hours: Sunrise to sunset

Ducks

Season:

- North Zone: Oct. 29 through Dec. 27, 2016
- Middle Zone: Nov. 5 through Jan. 3, 2017
- South Zone: Nov. 24 through Jan. 22, 2017

Bag limit: 6 ducks daily with species restrictions of

- 4 mallards (no more than 2 females)
- 3 scaup
- 3 wood ducks
- 2 redheads
- 2 hooded mergansers
- 2 pintails

- 2 canvasbacks

- 1 black duck

- 1 mottled duck

Possession Limit: Three times the daily bag or 18 total, varies by species

Hours: One-half hour before sunrise to sunset

Coots

Season: Concurrent with duck seasons in the respective zones

Limits: 15 daily and 45 in possession

Hours: One-half hour before sunrise to sunset

Snow and Ross's geese

Season: Nov. 11 through Feb. 6, 2017

Limits: 20 blue, snow, or Ross's geese daily with no possession limit

Hours: One-half hour before sunrise to sunset

White-fronted geese

Season: Nov. 11 through Feb. 6, 2017

Limits: 2 daily and 6 in possession

Hours: One-half hour before sunrise to sunset

Canada geese and brant

Season: Oct. 1–9 and Nov. 11–Feb. 6, 2017

Limits: 3 Canada geese and brant in aggregate daily, 9 in possession

Hours: One-half hour before sunrise to sunset

Youth hunting days

Seasons:

- North Zone: Oct. 22–23
- Middle Zone: Oct. 29–30
- South Zone: Nov. 19–20

Limits: Same as during the regular waterfowl season

Hours: Same as during the regular waterfowl season

Requirements: Any person 15 years old or younger may participate in youth waterfowl hunting days without a permit provided they are in the immediate presence of an adult 18

years old or older. If the youth hunter is not certified in hunter education, the adult must have the required permits and have in his or her possession proof of hunter education unless exempt. The adult may not hunt ducks but may participate in other seasons that are open on the special youth days.

Falconry season for doves

Season: Sept. 1 through Dec. 16

Limits: 3 daily and 9 in possession, singly, or in the aggregate (any waterfowl taken by falconers must be included in these limits)

Hours: One-half hour before sunrise to sunset

Falconry season for ducks, coots, and mergansers

Season: Feb. 10 through March 10

Limits: 3 daily and 9 in possession, singly, or in the aggregate during the regular duck hunting seasons (including teal and youth seasons) and extended falconry seasons (any doves taken by falconers must be included in these limits)

Hours: One-half hour before sunrise to sunset

Light goose conservation order

Season: Feb. 7, 2017 through April 30, 2017

Limits: No daily or possession limits

Hours: One-half hour before sunrise to one-half hour after sunset

Requirements: Hunters must possess a conservation order permit unless he or she is 15 years old or younger and in the presence of an adult 18 years or older, who has successfully completed hunter education or is exempt.

Methods: To take blue, snow, and Ross's geese, hunters may use shotguns capable of holding more than three shells, recorded or electronically amplified bird calls, or sounds or imitations of bird calls or sounds.

For more information on migratory bird hunting and waterfowl hunting, visit short.mdc.mo.gov/ZZn.

DID YOU KNOW?

Missourians care about conserving fish, forests, and wildlife.

Grab Your Gear for Frogging Season

Have a taste for frog legs? Grab your gear and find a pond to catch some green frogs and bullfrogs during frogging season, June 30 at sunset through Oct. 31. The daily limit is eight frogs of both species combined. The possession limit allows you to have no more than 16 frogs at a time.

Frogging can be done with either a fishing permit or a small-game hunting permit. Children under the age of 16 and Missouri residents 65 or older are not required to have a permit. Those with a fishing permit may take frogs by hand, hand net, atlatl, gig, bow, trotline, throw line, limb line, bank line, jug line, snagging, snaring, grabbing, or pole and line. With a small game hunting permit, frogs may be harvested using a .22-caliber or smaller rimfire rifle or pistol, pellet gun, atlatl, bow, crossbow, or by hand or hand net. The use of an artificial light is permitted when frogging.

For more information about bullfrog and green frog hunting, visit short.mdc.mo.gov/ZZm.

Tools For Conserving Sensitive Plants, Animals, and Habitat

If you love to hunt, fish, and enjoy nature, you're probably familiar with Missouri's more common kinds of plants, animals, and habitats.

» **Many of our lesser known plants, animals, and habitat types have declined sharply** since European settlement. Yet they remain a valued — and valuable — part of our state's natural heritage. These rare organisms work in their ecosystems in ways we don't fully understand, and they could contribute to future solutions for healthcare and economic enterprises if we continue to conserve and sustain them.

» **To help people, communities, builders, and land-use agencies** conserve these sensitive-but-important wild organisms and wild places, the Department and its partners have established two key tracking tools.

- The first is the Natural Heritage Program. Since 1981, this collaborative effort has tracked and ranked 25 lichen species, 504 plant species, 408 animal species, and 85 natural communities. To find the species and communities of conservation concern in your county, visit short.mdc.mo.gov/ZZX, and click on your county.
- A related tracking tool is the *Missouri Species and Communities of Conservation Concern Checklist*. Updated annually, this booklet shows the level of concern about each of the listings in the Natural Heritage Program's database. To download your copy, visit short.mdc.mo.gov/ZZB.

A bullfrog goes after a lure during frogging season.







BEAR WITH US

Department researchers
visit black bear dens to
study population growth

BY KRISTIE HILGEDICK

MOST PEOPLE HAVE A healthy respect for bears. Wildlife Biologist Jeff Beringer does, too. In fact, he has a keen appreciation for the species' remarkable intelligence, charisma, and strength.

But those natural feelings of wariness and respect haven't prevented him from crawling head first into bear dens, armed with only a needle and a vial of rapid-acting anesthetic.

For Beringer, a Missouri Department of Conservation resource scientist, it's just another day at the office.

"I tell everyone, 'Never corner a bear. Always give them an escape route.' And then I crawl into a den that may have a mother and cubs," he said. "Yes, sometimes there's adrenaline pumping."



It's not unusual for Wildlife Biologist Jeff Beringer to climb into a bear's den. The Missouri Black Bear Project has allowed biologists to more accurately estimate the state's bear population and glean a better feel for the type of dens bears prefer.

For several years, Beringer has been conducting a long-term research project designed to discover more about Missouri's American black bear (*Ursus americanus*) population.

"Our research, when combined with input from the public, will enable us to manage bear populations as they expand to fill available habitats, while ensuring they don't become overabundant," he said.

Bears Gain Ground in the Ozarks

For years, biologists believed black bears were extirpated from Missouri. Recent DNA evidence indicates a remnant population may have survived unnoticed, only to be bolstered by a reintroduction effort 57 years ago when bears were released into Arkansas from Minnesota and Manitoba.

"DNA from the remnant population is different than DNA collected from bears in other parts of Missouri and Arkansas," Beringer explained. "Coloration is also different. In southwest Missouri, we often see black bears with a white-chest blaze, while our other bear populations have varying degrees of black, brown, and cinnamon-colored coats.

"However, the remnant theory is unproven, and will remain so, unless we happen to find some DNA from an archived bear skull or bones."

Today, it appears Missouri's black bear population is tentatively expanding, primarily because habitat has improved.

That wasn't always the case. For decades, during the late 1800s and early 1900s, frontier logging of old-growth forests was unregulated in the Ozarks. Free-range livestock was common, and wildlife regulations were weak or nonexistent.

"You could hunt bears year around," he said. "When acorns hit the ground, bears had to compete with free-range cows, hogs, and goats for them. Those were tough times for a lot of our wildlife."

Since that era, cutover forests have matured, allowing Missouri's woodlands and forests to offer greater quantities of high-quality mast (acorns and other tree nuts).

"We think we know how many

bears are out there. Now we want to know how fast that population is growing," Beringer said.

He noted city officials often attempt to predict future human population growth trends to adequately plan for schools, roads, and public safety. The analogy holds true for Missouri's bears, which need their own version of infrastructure, he noted.

"And that means habitat," he explained.

Bears Once Flourished Here

Once found in abundance, black bears were staples for early settlers who relied on them for their meat, fat, and skins. Many early county histories contain reports of the remarkable number of bears in all areas of the state. Second only to deer, bears were the most common animal harvested by pioneers and travelers.

Obviously, modern-day Missourians no longer rely on bears for survival.

But flourishing, healthy populations of wildlife continue to offer benefits to humans — economically, aesthetically, and spiritually. The idea that wildlife is universally important to the lives of people — and people should have access to it — is a fundamental tenet of the North American Model of Wildlife Conservation, which declares wildlife is owned by no one, but is held in public trust for the benefit of every generation.

Attaching radio collars to the bears' necks has helped researchers better understand how male bears follow heavily wooded corridors for hundreds of miles. "It shows the importance of maintaining corridors for dispersal," said Wildlife Biologist Jeff Beringer.



A Healthy Balance Between Humans and Wildlife

Missouri currently has 3 million acres of bear habitat, most of it publicly owned. Researchers are trying to determine the sweet spot for the size of Missouri's bear population.

"If bear populations get too dense, we're going to have more bear and human conflict," Beringer said. "We need to be able to predict where this population will expand. When do we need to start managing bears?"

Conservationists sometimes use the term "social carrying capacity" to describe the public's tolerance, or intolerance, for wildlife. Although researchers have not yet surveyed Missourians to discover what level of interaction residents might accept, Beringer thinks it's important to plan ahead to ensure that bears and people can continue to coexist.

Knowing the number of bears on the landscape, and understanding where they exist, will help reduce conflict, he said. Armed with accurate information, Department staff can better assist communities where bears are prevalent.

Like white-tailed deer, bears are harvest-limited, meaning in the absence of a harvest, their populations will eventually grow to levels incompatible with humans.

"Bears can live a long time once they reach adulthood," Beringer said. "Without management, bear populations would grow and so would conflicts. We have to find the happy medium. Having too many bears for the habitat is unfair for bears and their human neighbors."

Eventually, if bear numbers continue to increase, Beringer foresees scheduling a hunting season in the state.

The Missouri Black Bear Project

Researchers with the Missouri Black Bear Project are working to estimate the survival, recruitment, and movement of black bears. Data from this project will be used as baseline information for a comprehensive black bear management strategy.

The project is a cooperative effort with Mississippi State University and is funded through a Wildlife Restoration grant.

In the first phase, researchers captured animals and equipped them with GPS collars to determine home range and reveal where bear populations exist in Missouri.

"Based on this information, we formulated a plan to estimate the state's population of black bears," Beringer said.

It's hard to estimate bear numbers, since the animals occur at low densities, are secretive, and seldom spend a lot of time in one place. The Department's telemetry study revealed female bears annually cover more than 40 square miles and male bears cover 100 square miles.



Be Bear Aware

Although bears almost never attack people, taking a few precautions is sensible. By following these guidelines to "Be Bear Aware," humans will be able to stay safe in bear country and keep Missouri's bears wild.

First, hikers and campers should stay alert and avoid confrontation. By making noise — clapping and talking loudly — and traveling in groups, people can better ensure they don't startle a bear. It's also a good idea to keep pets leashed. If a hiker or camper does encounter a bear, it's best to back away slowly with arms raised. A calm, but loud, voice works best.

"Walk away slowly, but do not turn your back to the bear and do not run," Beringer advised.

Additionally, with their powerful sense of smell, odors attract bears, so it's a good idea to keep a clean campsite and store all food, garbage, and toiletries in a secure vehicle or strung at least 10 feet high between two trees. Unfortunately, a fed bear is a dead bear, so never feed bears, on purpose or by accident. If you live or camp in bear country, don't leave pet food sitting outdoors. Clean barbecue grills and store them indoors. Don't use birdfeeders from April through October in bear country. Store garbage securely until trash day. Use grounded electric fencing to keep bears from beehives, chicken coops, vegetable gardens, orchards, and other potential food sources.

Feeding bears makes them lose their natural fear of humans and teaches them to see people as food providers. They will learn to visit places like homes, campsites, and neighborhoods to look for food, instead of staying in the forest. Bears that have grown accustomed to getting food from humans may become aggressive and dangerous. When this happens, they have to be destroyed.

"Help bears stay wild and healthy, and keep you and your neighbors safe," Beringer said. "Don't feed bears."



Beringer estimates 350 bears, spread across approximately 20 counties south of Interstate 44, reside here. Scientists arrived at that estimate through a bear hair snare, a simple device designed to steal a few hairs from a bear as it crosses over or under a barbed wire fence to smell something strategically placed by biologists.

"Some folks say it's like a burglar leaving their license at the scene of a crime. Bear hair collected on barbed wire at lure sites can tell a biologist exactly which bear was there," Beringer added.

Over the course of two years, starting in 2010, nearly 800 hair snares covering over 1,500 square miles detected 141 different bears. Using this information, researchers estimated Missouri was home to 279 animals.

"We were able to use DNA to count bears without seeing or touching them," he said.

Beringer thinks the population is trending upward, but bear populations do not grow fast. The species is dependent on older females to produce and raise cubs. If a female adult dies at age 5, she likely only added one or two bears to the population. If she lives to age 15, she may add as many as 15 bears to the population, depending on how many cubs survive.

"We're seeing high survival for adult females," he noted. "We expect the bear population to increase and expand into new areas, but are not sure how fast this will happen. Our current research examining the survival and reproductive rates of female bears should provide some answers."

The Second Phase

Determining cub survival is the variable researchers are hoping to nail down during this phase.

Measuring the age at which females have their first litter, how long they live, and how many cubs they raise, on average, will allow scientists to calculate the bear population's growth rate. By pulling a pre-molar, researchers are able to determine some of that information.

Collecting that data requires a cooperative effort between several Department divisions. Department employees trap female bears during the summer months, and Beringer and his crew outfit them with radio collars so their movements can be tracked and their winter dens can be visited.

Most bears don't reproduce until they are 3 to 7 years old. They then breed every other year, raising cubs in alternate years.

For example, in 2014 Beringer's team captured and radio-marked a female of breeding age. That winter they found her den and noted she had two



Staffers from across the Department of Conservation have assisted the biologists in their work. In this photo, Wildlife Management Assistant Evan Grusenmeyer examines a cub, with the help of Forestry Regional Supervisor Terry Thompson and Resource Science Assistant Courtney Nicks.

cubs — one female and one male. They revisited the den again the following year, finding her and the female yearling cub, but noticing the loss of the male.

Survival for that litter was 50 percent.

The black bear study is testing three assumptions. First, 95 percent of adult bears are living from one year to the next. Second, females are averaging 2.2 cubs per litter, and third, females are typically 4 years old when they have their first offspring.

Beringer noted if 80 percent of cubs in Missouri are surviving, Missouri may have 500 bears by 2018. If fewer than half of Missouri's cubs make it, the state won't reach 500 cubs until 2030.

The second phase is a 7-year project, currently in its second year.

"Over time, if we visit an adequate number of dens, we'll get a feel for overall cub survival, and this will help us predict how fast the overall bear population is growing,"



he explained. "So far, we are seeing good survival for adult female bears, but we haven't visited enough dens to accurately assess cub survival."

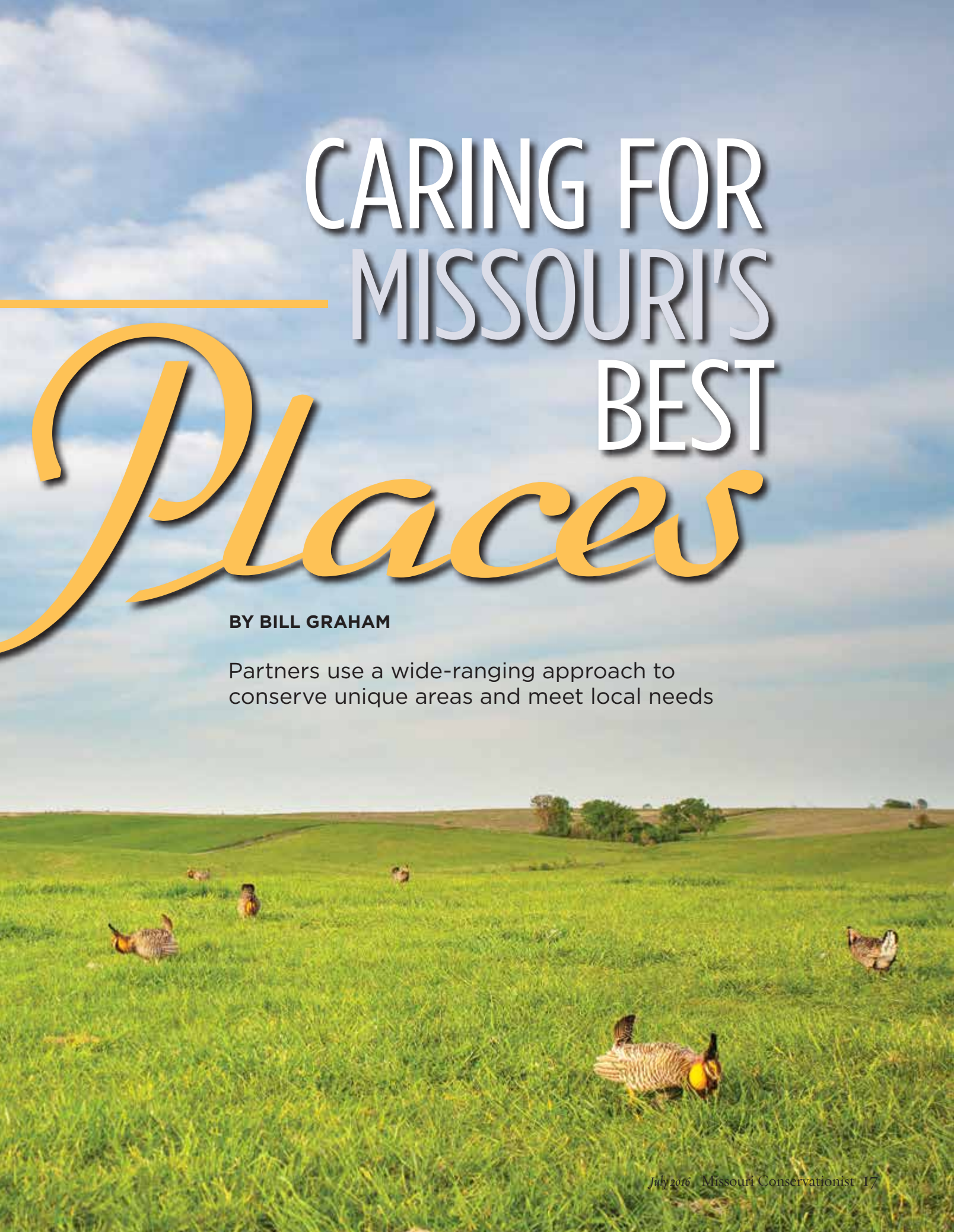
He feels the Missouri landscape could sustain more than 1,000 bears. "We have a lot of habitat, mostly on public land," he said.

For more information about the Missouri Black Bear Project, visit fwrc.msstate.edu/carnivore/mo_bear. ▲

Kristie Hilgedick serves on the Department of Conservation's communications team. She enjoys traveling to new places and spending time outdoors.

Wild

NOPPADOL PAOTHONG



CARING FOR MISSOURI'S BEST

Places

BY BILL GRAHAM

Partners use a wide-ranging approach to
conserve unique areas and meet local needs

PRAIRIE GRASSES SWISH AGAINST HIKING boots. Oak leaves crunch underfoot. A leopard frog splashes into a creek, scattering for a moment shiners and darters. A hiker can experience all these sights and sounds in a single walk where Missouri's best remaining natural systems — prairies, woodlands, wetlands, forests, and rivers — intertwine. Truly wild places remain because Missourians value natural beauty and outdoor recreation.

But in an ever-changing world, the next challenge is to enhance and ensure their future.

The Missouri Department of Conservation nurtures nature statewide, from helping people plant backyard butterfly gardens to providing expertise for forest managers. But the Department also places a priority on providing comprehensive conservation services for high-quality ecosystems that offer Missourians unique connections with nature. These places conserve remnants of what Missouri looked like before 1800, when European settlement brought in land-use transformations that continue today.

Endangered prairie chickens still dance on leks, also known as booming grounds, in northwest and west-central Missouri thanks to partnerships and cutting-edge science. Ruffed grouse maintain a forest foothold in east central Missouri due to Department and private landowner habitat efforts. Alligator gar that can grow 10 feet long and weigh up to 300 pounds are being restored to marshy waters where wetlands remain connected with the Mississippi River in the Bootheel. A watershed in

northeast Missouri holds the mosaic — remnant prairie, woodlands, streams, and forest — in one interwoven community.

Geographically, the highest quality natural areas are small islands compared to the cities and farms that sustain Missouri. Yet wild places also add billions of dollars in economic benefits, and as important, incalculable value to Missouri's heart and soul. Where conservation opportunities are abundant or critical, the Department is using a wide-ranging approach to serve the needs of both people and nature.

Saving a Grassland Heritage

Prairie chicken males in a mating mood danced at sunrise this spring in north Harrison County. They stomped the ground and puffed out orange air sacs, making a booming sound to charm hens on hilltop leks. They're a rare sight in a state with fewer than 300 prairie chickens, where hundreds of thousands once roamed. Conservation partners are giving this flock a boost with birds they brought in from Nebraska. Biologists fanned out across the countryside in April to count them and those in a similar restoration site in Iowa. Their efforts crossed state lines because the flocks do, too — just like they did when grasslands had endless horizons.

"These birds don't live their lives on 160 acres," said Dave Hoover, Department small game coordinator. "They get up and move."

Dunn Ranch Prairie gives prairie chickens the wide-open, patchy cover they need to breed and escape predators.





Pawnee Prairie Conservation Area is a natural remnant of the once-vast tallgrass prairie and serves as prime habitat for the secretive sedge wren and other wildlife.



Sedge wren

Conservation is moving to help native species across broad areas. The Department's Pawnee Prairie Conservation Area and The Nature Conservancy's Dunn Ranch Prairie are anchor points for preserving habitat benefitting all prairie plants, fish, and wildlife in the Grand River Grasslands. The Iowa Department of Natural Resources is also a partner, as are other public agencies, private landowners, and cattle farmers participating in voluntary habitat-management programs. A focused effort helps counter the fact that less than one-tenth of 1 percent of Missouri's original prairies survive today.

Prairie chickens evolved on fire-stimulated native grasslands grazed by brawny bison. But their sustainable future is linked to beef. The Department's studies show forage management can be tweaked to make cattle pastures better places for prairie chickens to nest or raise broods. Those changes can also boost forage quality, which benefits livestock profits with better calving success and weight gain, said Kendall Coleman, private land conservationist. Coleman helps farmers use federal and state grants to implement wildlife-friendly practices. Landowners can affordably remove unwanted trees, plant native grasses and wildflowers, vary vegetation heights, and fence cattle out of streams. Wildlife benefits, while ranchers get

better forage plant vigor and cleaner water sources to nourish cattle.

"My hope is they'll learn this is profitable," Coleman said.

Public prairies such as Wah'Kon-Tah in the Upper Osage Grasslands near El Dorado Springs in west central Missouri are managed to benefit prairie species. Efforts range from bobwhite quail research using radio telemetry to hand-collecting seeds from endangered Mead's milkweed plants for restoration plantings. Two prairie chicken flocks are also in the area. But public prairie areas are tiny remnants on broad landscapes.

"If we can work with farmers to protect their profits while improving wildlife habitat, that's where we all win," said Matt Hill, wildlife management biologist.

Prairies are more than just wildlife and wildflowers. Baker Branch at the Department's Taberville Prairie provides water for wildlife but also harbors frogs and fish such as colorful orangethroat darters. The branch is an outstanding resource because so few streams remain that are fed by seeps and springs with water filtered by prairie sod and shaded by grasses and small willows.

"I've sampled it in the heat of summer," said Tom Priesendorf, fisheries management biologist. "It's amazing how cool that water is in the middle of August."

Conservation grazing improves grasslands for wildlife and ranchers' bottom line.



Nurturing Forests In the Missouri River Hills

A walk in the oak-hickory forest is timeless at the Daniel Boone Conservation Area in Warren County east of St. Louis. There, the area's namesake pioneer would find the same plants growing today as when he entered Missouri in 1799. Ruffed grouse, a rarely seen species of concern, still drum on logs in spring mating rituals. Almost 7 miles to the northwest, the Danville Conservation Area preserves forests that open into dry glades, a kind of dry, desert-like habitat with unique flora such as coneflowers. But also key to their health is the fact that, in between the Department's public areas, most private land is forest or open woodland, too.

"It's the largest contiguous tract of forest north of the Missouri River," said Jamie Barton, private land conservationist. "There are quite a few landowners willing to do habitat work in the area."

Deer and turkey hunters value the Missouri River Hills area. So do naturalists. Steep, rocky terrain kept the plow at bay and the forest in place. But science-based management is required to keep unique original plant communities thriving. Prescribed fire mimics historical fire to keep limestone and sandstone glades free of red cedar and populated with plants such as prairie clover and Indian paintbrush. Fire, timed properly, also keeps woodlands open where grasses and wildflowers grow among scattered oaks and hickories. In the valleys, thinning or harvesting forests boosts plant diversity, which helps wildlife and makes marketable timber grow faster.

Bill and Margie Haag thinned timber, cleared rocky glades of red cedar, and eliminated nonnative fescue from pastures on their land near Portland in Callaway County. Wild game increased, native grasses and wildflowers thrived, and the Haags also noticed more songbirds.

"You get 10 to 20 percent more browse in the woods, and that gives the (ruffed) grouse, deer, and turkey a boost," Bill Haag said. "But the wildflowers are almost as fun to see as the deer. We've got wildflowers that will knock your eyeballs out."



Ruffed grouse still drum in some River Hills woodlands.



Restored glade blooms with native wildflowers.

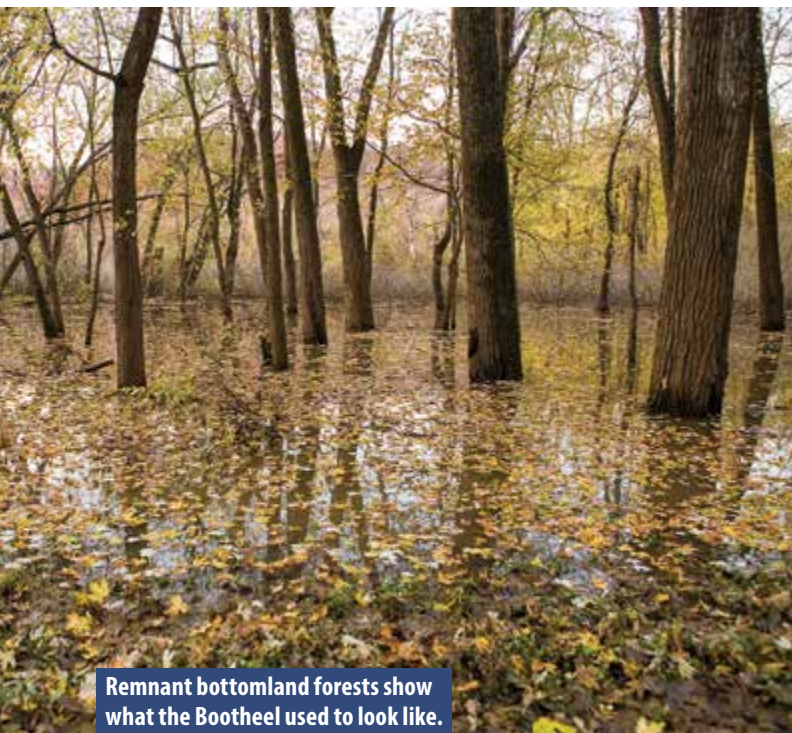


Bowhunter at Danville Conservation Area



Habitat improvements on both public and private land in the River Hills area are important for ruffed grouse, which have declined in the state. John Heckmann uses timber stand improvements and prescribed burns on his property with the help of Department expertise. The flush of new vegetation along with treetops on the ground provides food and cover for upland wildlife to flourish.

"Habitat is the single most important wildlife management tool that I can control," Heckmann said.



Remnant bottomland forests show what the Bootheel used to look like.



Researchers monitor alligator gar restorative efforts.

Where the Big River Bends

Tall trees, swamp rabbits that swim well, and a north-flowing Mississippi River are part of the scenery at the Donaldson Point Conservation Area. It's a small but valuable surviving slice where birds such as Mississippi kites nest in cypress and cottonwood trees looming over oxbows, ridges, swales, and sloughs. Agriculture transformed 2 million acres of bottomland forest and wetlands in southeast Missouri's Bootheel region into productive row crops and cotton fields. But along the Mississippi, where the river bends sharply around flood-prone points, the Department manages conservation areas with remnant forest and sloughs, such as Ten Mile Pond, Seven Island, Donaldson Point, Girvin, and Black Island.

"They're really nice areas that preserve the remnant pieces," said Ross Glenn, resource forester. "You can imagine what the whole area looked like before the land changes took place."

Department conservation areas and Big Oak Tree State Park are anchors for a broader effort to restore wetlands and forest in the Bootheel's River Bends area. Farms and crops will always remain dominant on the level, rich Mississippi bottomland. But the Department works with farmers interested in using conservation to their benefit. Some crop fields can be marginal producers due to wet conditions. Department staff help connect landowners with federal, state, and private conservation programs that provide money for dirt work to scoop out pools and

control water to reestablish wetlands on wet-prone fields. Property owners get a financial return on acreage, and wetlands useful for flood control and fish and wildlife habitat are re-established. Some private property owners seek help managing remnant timber stands. Tree planting assistance is available where farmers seek buffer zones along riparian corridors to reduce erosion during flood events.

"We're trying to restore, manage, and enhance where we can," Glenn said.

The Department's bottomland forests and wetlands are popular public hunting and fishing destinations in a region with little public access. But they're also home to swamp rabbits, a species of concern in Missouri. The state-endangered Swainson's warbler is found in thickets and cane breaks. Fisheries biologists are stocking alligator gar, fish that can become giants, in the sloughs. Researchers monitor birds, frogs, and fish.

Off the beaten path, Glenn said, "these are really neat areas to experience pieces of what used to be here."



Rare swamp rabbit

Spring Creek's Interwoven Legacy


Managing Missouri's best wild places is rarely about just taking care of a forest, wetland, grassland, or stream. More often, nurturing nature is about caring for ecologically pure remnants and the transition zones where they intertwine, such as the Spring Creek watershed of northeast Missouri. The Department manages the Morris Prairie Conservation Area in the watershed's upper reaches, 40 acres of open, unplowed prairie. Yet only 4 miles southwest in the Dark Hollow Natural Area, old-growth oaks shade ravines rich with ferns, said Ryan Jones, Department wildlife biologist.

Historically, Jones said, "you could stand in the corner of Dark Hollow in the spring and hear ruffed grouse drumming and prairie chickens booming."

Nearby, Spring Creek cuts through Union Ridge Conservation Area where forest in the valleys becomes open woodland on the upper hillsides. Applying decades of scientific research and observation, biologists strategically use prescribed fire to restore prairie and savanna natural communities on the area's upper ridges and meadows. Deer and turkey benefit, but so do butterflies, birds, and native plants valued for their beauty and variety.

"That's what makes the Spring Creek watershed neat," Jones said. "It's a true progression of what most of Missouri originally looked like, from upland prairies to bottomland forests, and there's savanna and woodland in between."

But simply setting land aside from development does not ensure ecological preservation, nor promote the best hunting, fishing, birding, and hiking that a high-quality natural area can provide. Restoring wildlife-rich natural systems requires thoughtful land management and



Biologists strategically use prescribed fire to restore prairie and savanna natural communities on Union Ridge Conservation Area's upper ridges and meadows.



Union Ridge Conservation Area

DAVID STONNER



"I'd never seen purple coneflowers on my place. Now, I've got eight or nine patches."
Michael Turner, an Adair County landowner, halted unnecessary mowing in pastures and applied treatments such as prescribed burns. Remnant native plants responded with lush growth.

partnerships. The Department provides guidance to property owners, many who value deer and turkey, but who also appreciate wildflowers blooming in summer and native grasses turning golden red in autumn.

"Just the timber stand improvement in our woodland was incredible," said Michael Turner, whose Adair County farm is in the watershed. "I'd never seen purple coneflowers on my place. Now, I've got eight or nine patches."

Turner halted unnecessary mowing in pastures and applied treatments such as prescribed burns. Remnant native plants responded with lush growth.

"I just can't believe the way it's responded to pretty aggressive management practices," he said. "It's beautiful."

The Department and its partners also provide expertise and cost-share funds for landowners to fence cattle out of stream corridors and build alternative watering sites for livestock. That protects water quality in Spring Creek, which has 21 species of fish and three species of mussels. The fish include Topeka shiners, an endangered species restored with hatchery-raised fish originating in Missouri. They are considered an experimental,

nonessential population. Thus the species is returned to the ecosystem, but they cause no legal restrictions on private land-use due to their presence.

The Topeka shiner, prairie chickens, rare plants, and places where coneflowers provide pink or yellow blooms near the oaks — they all evolved amid dynamic ecosystems made complete by their diversity.

We've learned an important lesson in a century of conservation progress. Saving a single prairie remnant won't ensure the prairie chicken's survival. A woodlot is not big enough for ruffed grouse. Streams without clean water provided by good forest and woodland management won't support smallmouth bass. But conservation

efforts across broad ecosystems will support the fish, wildlife, and scenery Missourians love to experience, now and tomorrow.



Bill Graham is a media specialist for the Kansas City Region who lives near Platte City. He's a lifelong hunter, angler, and camper who also greatly enjoys hiking and photography in Missouri's best wild places.

Landowners get help protecting Topeka shiner habitat.



Up a Lazy

FISHERMAN: NOPPADOL PAOTHOONG

Kiver

BY JIM LOW



The upper portion of Missouri's crookedest river is a smallmouth stream beyond compare

It's the sound of springwater dripping from moss-covered bluffs. It's a family of eagles playing leapfrog down a tunnel of sycamores. It's an ultralight fishing rod bent double, pulsing with bronze-backed fury. The upper Gasconade River is different in every season and around each bend, and it's arguably the best place in Missouri to catch smallmouth bass.

That's a big deal to me. As teenagers, my brother, Rick, and I spent a good deal of our spare time chasing smallmouths. We did it first on foot, wading through streams we could cast across. After Rick bought an aluminum canoe, no smallmouth within 60 miles of Jefferson City was safe.

High on our list of favorite waters were the deep pools of the lower Gasconade River. In those early years, we

never felt the need to venture farther upstream than Interstate 44. A straight line from the Gasconade's confluence with the Missouri River to its upper forks west of Hartville stretches 110 miles. But in making that journey, the river meanders more than 250 miles, making it the Show-Me State's crookedest and longest interior river.

That's a lot of bends, and for a smallmouth angler, the mystery of what lies beyond the next bend is irresistible. The portion of the Gasconade that I had never seen haunted me for years. So in my first year of retirement, I set out to fish it all. I fell short, but I did manage to explore nearly 50 miles of river in seven days of floating. Here is what I found.

Upper Upper

Looking at a map of Wright County, I noticed the Department's Odin Access at what looked like the Gasconade's headwaters, just west of Hartville, and decided to start my smallmouth odyssey there. Only later did I notice that Odin Access is on Woods Fork, a few miles upstream from the Gasconade proper. I was glad for my mistake because this turned out to be a delightful piece of water.



Best Lures

The twin-tailed grub at center was the author's most effective lure. However, each of the others had its moment in the sun. They are, clockwise from the top left: three crayfish fly patterns, a floating minnow crankbait, a Clouser minnow fly pattern, a lipless topwater minnow imitation, and a crayfish crankbait.



LURES AND FISHERMAN WITH SMALLMOUTH: JIM LOW

The temperature already was above 80 degrees when I arrived around 8:30 a.m. on a sultry July day. I had correctly assumed the water would be too shallow for floating and left my kayak at home. I pulled on a pair of old hiking shoes and headed down the footpath from the parking lot to the water.

A short wade upstream landed me in one of the most beautiful smallmouth holes I've ever seen. Water sailed like a transparent sheet of jade over smooth bedrock. The current undercut a bluff, where a cascade of tiny streams trickled over a mossy lip. The effect was like a thousand tiny wind chimes in a gentle breeze.

Fish had to be lurking beneath the bluff. However, with the water level about 2 feet higher than normal, only a handful of longear sunfish and a couple of 8-inch smallmouth took the minnow and crawdad imitation crankbaits I offered.

I waded upstream half a mile to the Wood Fork Road Bridge, past several great smallmouth spots, before deciding the fish just weren't going to bite. Heading back downstream, I switched to fly gear and waded another half mile downstream from Odin Access before encountering cattle in the river. This little stretch was shallow and nondescript, not the kind of water I associate with good smallmouth fishing. I'm sure there is plenty of good smallmouth water in the 10 miles between the Odin and Camp Branch accesses, but I decided to leave the upper end to livestock and fish upstream from the next access — Camp Branch, just east of Hartville.

Conservation Agent Keith Wollard says the stretch of water from Camp Branch to Buzzard Bluff Access and from there to Wilbur Allen Access is strictly kayak water. It's too shallow in the summer for larger craft, but has holes too deep for wade-fishing. I moved on downstream, hoping to make it back to the upper, upper Gasconade later in the summer.

Middle Upper

By the time I got around to floating from the Department's Wilbur Allen Access to Anna Adams Access in late July, the river was still a little high, and results of recent flooding were visible everywhere. Huge uprooted trees were stacked like so many straws in river bends and across narrow chutes. This complicated paddling, but it also created excellent smallmouth habitat. Bronzebacks were tucked into newly scoured holes, eager to snap up passing morsels.

A local told me about the hottest smallmouth lure — a 3-inch brown, twin-tailed grub — so I put it to the test. As I fished a rocky bank, a fat, 15-inch smallmouth bent my rod double for so long I thought it might break.



Why the Upper Gasconade?

In 2014, Department crews sampling fish on the Gasconade River in Laclede County found 40 percent more smallmouth bass than they had in 2012 and 2010. Nearly one in five were 12 inches or longer, and five out of every 100 were 15 inches or larger. They found especially large numbers of smallmouth that now are 4 and 5 years old.

For me, that's reason enough. But just as important to me is solitude. In the seven days I spent on the upper Gasconade, I saw three other anglers. One of the things I treasure about time outdoors is the chance to put my mind in neutral and surrender myself fully to living in the moment. The upper Gasconade is great for that.

When I finally got the fish in the net, I took a few photos and released it, eager to repeat the experience.

I caught several more 10- to 15-inch smallmouths that day. Each one surprised me with an anvil-like strike followed by a long, deep dive or spectacular jump. Most were fat and dark-flanked. Some sported black tiger stripes, my favorite color variation.

High water forced me to unload my 12-foot kayak and portage around Kincheloe Bridge, downstream from Allen Access. I was hot and tired but happy when I hauled up at the USDA Forest Service (USFS) Mayfield Spring Access after 10 hours of paddling and casting.

I was on the water by 7:30 the next morning. The action was surprisingly slow until mid-morning. It picked up after I passed the Route AD Bridge, with steady action from both smallmouth and rock bass, also known as goggle-eye. This stretch of river had more flat water than the previous day, with lots of narrow, debris-clogged chutes. In spite of having to walk my kayak around some of these obstructions, I arrived at the USFS Dry Branch Access a little after noon, and enjoyed the rest of the day sitting up to my belly button in cool water at the foot of the boat ramp, reading, and dozing as the mercury climbed to 96 degrees. Heaven.

Sunrise the next day found me on my way to Anna Adams Access. The weather had cooled nearly 10 degrees, and a west breeze made the day pure perfection. However, the action was slow until after noon. Just downstream from the Highway 32 Bridge in a deep, narrow stretch of water hemmed in by maple trees on one side and by a bluff on the other, I hauled in goggle-eyes and smallmouth as fast as I could cast.



The bites really took off downstream. I wore out several plastic grubs along a steep, boulder-studded bank. Smallmouth, goggle-eyes, and green sunfish wouldn't leave my bait alone. They were equally enthusiastic about floating minnow lures, crayfish imitations, and beetle-spins. They were ready to eat.

This stretch of river had several long, deep pools that required more paddling, and again I had to drag my boat around a few obstructions. I reached the Department's Anna Adams Access around 2 p.m. and headed home with lots of photos and great memories.

Lower Upper

This was my favorite stretch, partly because I floated it in late September when the air was cool and trees were showing fall color. A fleece jacket and waders felt good in the mornings, and the fish were biting.

I left Anna Adams Access around 9 a.m. and immediately was joined by a mature bald eagle. It watched me drift under successive perches in ancient sycamore trees before leapfrogging ahead throughout the morning. Later in the day I saw a juvenile bald eagle, then a pair. Eventually I realized I was playing tag with a family of two adults and two juveniles.

The first half of the day featured lots of small riffles. The afternoon was mostly long, deep holes overshadowed by bluffs. The action was good. Here I caught a couple of chunky largemouth bass along with smallmouth and rock bass. The best action came late in the afternoon, when the sun dipped behind towering bluffs. The eagles were waiting for me when I arrived at the USFS Sonora Access at 5:30.

When I launched my kayak at 7 a.m. the following day, the temperature was 53 degrees and the sky was overcast. The eagles rejoined me.

I hooked several big bronzebacks, but they threw various lures back at me with flying leaps. An abundance of willing 10- to 12-inchers, rock bass and a couple more largemouths relieved my disappointment.

The fish were in the mood for something different, preferring a Rebel craw crankbait over the twin-tailed grub. The best fishing early in the day was in a big eddy at the foot of a deep chute not far downstream from the Sonora Access. Every cast brought a strike.

Farther downstream I found long, deep pools with bluffs and rocky banks that made my casting arm twitch. I took two 14-inch largemouth in this stretch, but the action fell off from where it had been earlier. I had to walk my kayak through several shallow riffles.

The best fishing of the day was in the last 300 yards before the USFS Barlow Ford Access. This long, deep pool lies at the foot of a bluff and is carpeted with boulders — ideal smallmouth habitat and a perfect place for either spin or fly-fishing.

I reached this spot around 1 p.m., so there was no hurry to load up and head home. I let my kayak drift slowly through the hole. In one deep spot, something tapped my crayfish imitation. I paddled back to the top, repeated the drift, and got the same tap in the same place. On the third drift, a husky smallmouth nailed the crankbait and headed for Davey Jones' locker. I was glad to be using slightly heavier tackle than normal as I struggled to keep the bronze battler above the rocky streambed. He lacked the gymnastic flair of a smaller fish, coming to the net without jumping, much to my relief.

I didn't measure him. Why ruin a good fish story with statistics? I'm sure he was at least 17 inches. Could have been 18. Probably was. Yeah, I'm pretty sure it was 18. Maybe even 19.

Around the Bend

I regret not getting to explore the 19 miles of river between Camp Branch and Wilbur Allen accesses. I know it would have been as scenic and fishy as the rest. But in a way, I'm also glad I didn't get around to this stretch. It means I still have two or three days' worth of river to explore. Plus, my adventure put me in contact with other smallmouth fanatics who have gone much farther than I have, fishing the river's upper tributaries — the Big Piney, Little Piney, and the Osage Fork. That's another 160-plus miles of prime smallmouth water to explore.

Maybe I'll see you there. ▲

Jim Low is a freelance writer/photographer who retired after 24 years as the Conservation Department's news services coordinator. He and his wife, Diane, live near Jefferson City.

Finding accesses to the river was a cinch. Since I planned to fish from a 12-foot kayak that had no room for camping gear, I needed to divide the 65 miles up into floats that could be done in one day with plenty of time to fish.

Wright County

- **Odin Access (Department)** 6 miles west of Hartville on Woods Fork of the Gasconade. Wade-fishing only. 10 miles to ...
- **Camp Branch Access (Department)** 2.5 miles east of Hartville on Highway 38. Gravel boat ramp and picnic area. 11.8 miles to ...
- **Buzzard Bluff Access (Department)** 6.5 miles east of Hartville on Highway 38, then 2.25 miles north on Route E. Concrete boat ramp and picnic area. 7.2 miles to ...
- **Wilbur Allen Access (Department)** 1 mile north of Manes on Highway 95, then 1.5 miles west on Radford Road. Gravel boat ramp. 11.8 miles to ...

- Mayfield Spring Access (USFS) 2.5 miles north on Route Z from Competition, then 1.2 miles east on Utopia Drive. Look for a small brown USFS sign. Last few hundred yards are rutted, muddy, and possibly impassible in wet weather. Remote area with canoe/kayak access. 9.5 miles to ...
- Dry Branch Access (USFS) 3 miles south from Highway 32 on Vintage Road from Falcon Post Office to Carter Road. Watch for a nearly invisible USFS sign post on left marking Forest Road 5108. One mile east on Carter/Forest Service road 5108. Concrete boat ramp at end of road or gravel bar access where road turns right. 8.8 miles to ...
- Anna Adams Access (Department) 18 miles east from Lebanon on Highway 32, then 3 miles north on Route K, and 3 miles east on Dawn Road. Concrete boat ramp. 4 miles to ...
- Brownfield Ford Access (USFS) 3.6 miles east on Flagstone Drive from junction of routes K and AC. Bear right where Village Drive forks off, and go straight past two private roads to the right. Gravel ramp for small trailers. 4.4 miles to ...

- Sonora Lane Access (USFS) 9 miles south of I-44 on Highway 17, then turn west on Sonora Lane just after passing Route E. Follow Sonora Lane ~2 miles to end of road. ~5 miles to ...
- Barlow Ford — 3.5 miles east on Route AB east from I-44, then take Smokey Road south 2 miles, staying left at the fork. The final quarter mile is low and muddy in wet weather.



Wild Bergamot

THE PREDAWN SKY was transitioning from deep black to inky indigo as the rippled horizon of Union Ridge Conservation Area began to take form. With just enough light to see, I left my flashlight in the truck and pulled out a hip pack with one camera and two lenses (16–35mm and 70–200mm), so I could move quickly along the ridge tops. One last call from a whippoorwill heralded the edge of night and the break of day. Gentle breezes rustled oaks in the savanna below me, my pants soaked to mid-thigh by the heavy dew. It made for a comfortably chilly walk, which I relished on this July morning, knowing that the temperature and humidity would quickly climb once the sun broke over the distant hills.

The sunrise over the undulating ridges was magnificent. Pockets of fog obscured the valleys and gave a gentle hint at the hills' steep and rugged terrain. Dewdrops twinkled on big bluestem and sumac, hanging like crystal lenses scattering a nearly blinding rainbow of light across the landscape.

I continued my hike and happened upon a nice clump of wild bergamot. It's in the family Lamiaceae (mint), genus *Monarda* and also known as bee balm and horsemint. The plants are common in Missouri, and their flowers bloom from April to August, depending on the species. A field of bergamot has a heady, spicy smell that I find intoxicating, and it's one of my favorite summer scents. It also tastes great. Wild bergamot makes a popular tea during cold and flu season.

Union Ridge Conservation Area is about 20 miles northwest of Kirksville and includes more than 8,000 acres of grasslands, prairie, savanna, and forest. The area had mainly been used for cattle ranching in the past. It is considered one of the Department's priority geographies, or best wild places, being conserved to its pre-settlement conditions.

Spring Creek Ranch Natural Area is located within Union Ridge. Department staff is restoring this 1,769-acre natural area to prairie and savanna. Through prescribed burning, a diverse mix of native grasses and wildflowers such as big bluestem, little bluestem, pale purple coneflower, and leadplant have returned to the landscape.

The plants are beautiful, and they add value to the wildlife in this habitat. I have seen signs of whitetail in the area, and I hear there is a good population of quail and other upland game.

—Story and photograph by David Stonner

📷 (main) 24–70mm lens • f/5 • 1/40 sec • ISO 800

📷 (inset) 16–35mm lens • f/5 • 1/2500 sec • ISO 400

We help people discover nature through our online Field Guide. Visit mdc.mo.gov/field-guide to learn more about Missouri's plants and animals.



Union Ridge Conservation Area





Dark Hollow Natural Area

Visitors will appreciate this hidden gem in northeast Missouri. It lies nestled in the transition zone between savannas and prairies to the south and Spring Creek's forested hills and bottoms to the north.

THIS 315-ACRE SULLIVAN County area offers opportunities for all types of outdoor enthusiasts. Deer hunting is allowed by archery and muzzleloader methods. Other upland game includes squirrel, rabbit, and turkey. With the variety of quality habitats, birding can be excellent during the spring and fall.

The area is also a designated natural area, recognized for its diverse, old growth forest. Julian Steyermark, author of *Flora of Missouri*, recognized this site as having value for its varied plant life in 1954. Visitors to the area will notice a tremendous diversity of tree species including oaks, hickories, basswood, sugar maple, and downy serviceberry to name a few. The forest also supports numerous wildflowers, including bloodroot, Dutchman's breeches, liverleaf, and Solomon's seal.

In spring, the lower north-facing slopes put on a show of ephemeral spring wildflowers, including spring beauty, bellwort, and Jack-in-the-pulpit. In contrast to the fern-rich forest of the ravine bottoms, the dry ridges support little bluestem, finger coreopsis, wild quinine, and other fire-adapted, shade-intolerant plant species found in prairies, savannas, and open woodlands.

Management of the area focuses on natural communities like savanna, woodland, and forest habitats that benefit a wide variety of wildlife. The southern third of the area is being restored to a savanna-woodland condition. A combination of prescribed burning, mechanical thinning, and



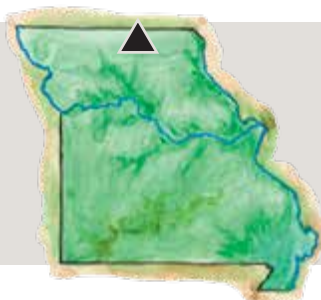
Hickory leaf

100mm macro lens • f/4 • 1/200 sec • ISO 250 | by Noppadol Paothong

invasive species control is used to develop and maintain this diverse open to semi-open habitat. A project to enhance and invigorate portions of the woodlands and forests has begun, with the primary goal of regenerating oaks to replace some of the 100- to 150-year-old trees that are beginning to die. Prescribed burning and mechanical thinning will be the primary tools used to accomplish the project.

To visit Dark Hollow Natural Area, take Highway 129 north from Green City for 1.75 miles, where Highway 129 makes a sharp turn to the west. Instead of heading west, head north on Hedge Drive (gravel) for 2 miles to the area parking lot on the right (east) side of the road. The area is accessible by a maintained field road that divides the area running east to west.

—Ryan Jones, area manager



Dark Hollow Natural Area

Recreation Opportunities: Wildlife viewing, bird watching, hunting, hiking, outdoor photography

Unique Features: Native forest, woodland, and savanna

For More Information: Call 660-785-2420 or visit mdc.mo.gov/a9333



MDC DISCOVER nature

To find more events near you, call your regional office (phone numbers on Page 3), or visit mdc.mo.gov and choose your region.

AQUATIC ADVENTURE

JULY 7 • THURSDAY • 9–11 A.M.

*St. Louis Region, St. Louis Regional Office,
2360 Hwy D, St. Charles, MO 63304*

*Registration required, call 636-441-4554
starting June 27*

Ages 6–12

What could be more fun in early July than seeing cool things in an aquatic habitat? Come and learn about an aquatic food chain and how we can affect it.

DISCOVER NATURE — FISHING: FROGGING CLINIC

JULY 8 • FRIDAY • 6 P.M.

*Northeast Region, Ted Shanks Conservation
Area, 3643 Pike 145, Ashburn, MO 63433*

Registration required, call 573-248-2530

All ages, families

The clinic will start with a classroom session, followed by a hands-on portion. All necessary gear will be provided, but participants are encouraged to bring flashlights/headlamps, boots or shoes that can get wet and muddy, and a valid fishing license for anyone 16 and older.

LEARN TO DEER HUNT OPEN HOUSE

JULY 12 • TUESDAY • 6–8 P.M.

*St. Louis Region, Jay Henges Shooting Range
and Outdoor Education Center,
1100 Antire Road, High Ridge, MO 63049*

*No registration required, call 636-938-9548
for more information*

Ages 6 and older

Stop by and visit with staff excited to help you learn more about deer hunting. Learn at your own pace with several booths covering benefits, regulations, gear, cleaning, and cooking. In addition, gain information and consider applying for a managed or mentored hunt this fall.

6 IDEAS FOR FAMILY FUN

BIG RIVER FISHING CLINIC

JULY 23 • SATURDAY • 6 A.M.–12 P.M.

*Northwest Region, Thurnau Fishing Access
near Craig, MO (take Hwy. 111 west 4 miles,
turn south on Annapolis Road to Thurnau.)*

Registration required, call 816-271-3100

Ages 11–15

Participants will meet at the Thurnau boat ramp for instruction on trotlining, set lines, and pole and line fishing, then go out on the Missouri River to fish with pole and lines. Fish cleaning instruction is also included. All necessary equipment will be provided. Dress for the weather and mud.

TURTLE MANIA

JULY 23 • SATURDAY • 1–4 P.M.

*Southeast Region, Cape Girardeau
Conservation Nature Center, 2289 County
Park Drive, Cape Girardeau, MO 63701*

*No registration required, call 573-290-5218
for more information*

All ages, families

Join us for a turtle-tastic time! Shelled, clawed, and scaled, turtles are some of the oldest creatures on earth. Stop by to learn about the species in our state and how they survive. We'll have turtle-themed crafts and activities as well as live turtles.

SUMMER IN THE CITY

JULY 29 • FRIDAY • 6–9 P.M.

*Kansas City Region, Discovery Center,
4750 Troost Ave., Kansas City, MO 64110*

For more information, call 816-759-7300

All ages

Spend the evening participating in all the fun activities a day at summer camp would offer. Adults and kids of all ages will enjoy archery, fire starting, nature art, atlatl-throwing, camp games, and more. Come enjoy a warm evening outdoors to wrap up and celebrate a fun summer!





Subscribe online • mdc.mo.gov/conmag • Free to Missouri households



I Am Conservation

Effective wildlife management is bigger than any single conservation area. Wildlife need habitat corridors that connect them with foraging and mating opportunities. The Missouri Department of Conservation created Conservation Opportunity Areas (COA) to address this concern. The idea is to get public and private landowners across a designated landscape to work together toward common wildlife management goals. Since 93 percent of Missouri is in private ownership, private landowners play a key role in the success of this management strategy. Marvin "Bud" Zumsteg owns 510 acres within the Missouri River Hills Conservation Opportunity Area. Zumsteg's property, and the habitat work he has done, plays an integral role in the COA's overall wildlife management goals. He has been doing wildlife management on the area for over 40 years, but we started working with the Department in 2008 to create a comprehensive forest stewardship and wildlife management plan. "I don't know why I didn't work with them sooner," said Zumsteg, who has completed nearly 400 acres of timber stand improvement. In addition, his habitat work includes opening glades, improving wetland habitat, and installing food plots. "The objective is to create a forest and wildlife utopia with the material we have," said Zumsteg. "It's a lot of work, and sometimes you don't get rewarded right away. But you just have to stick with it. You build the right habitat, and they will come. I've been all over the world, and there is no place, in my opinion, that matches the opportunities in Missouri." —*photograph by David Stonner*